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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,457	08/22/2003	Milton Feng	UI-TF-03050	8507

7590 10/26/2004
Martin Novack
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EXAMINER

JACKSON JR, JEROME

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,457

Applicant(s)

FENG ET AL.

Examiner

Jerome Jackson Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/4/04</u> . | 6) <input type="checkbox"/> Other: ____. |

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the present drawings are obviously informal. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-22,24,26-41,43,44 are rejected under 35 U.S.C. 102(b) as being anticipated by Jain '550.

Jain shows a light emitting heterojunction bipolar transistor. Claim 1 is anticipated because the Jain device has light emission by recombination in the base region. See figure 2 for example. Claim 2 is rejected as there is a collector-emitter voltage and modulating base current. See column 3 lines 44-46. Claim 3 is rejected as column 5 line 1 shows 12.4 GHz operation. Claim 4 is rejected as laser of Jain is operated in the same manner which is ordinary bipolar transistor operation. Claims 5 and 6 are rejected as the GaAs and AlGaAs materials are direct bandgap materials. Claims 7-9 are

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rejected as the Jain device operates in the same manner. See column 3 lines 32-46.

Claims 10-13 are rejected as the base of Jain is "heavily doped" and there is no specific doping magnitude claimed which would in any way structurally distinguish over Jain.

Claims 14 and 15 are rejected as there is laser emission and cavity structure in Jain.

See column 3 lines 53-61. Claim 16 is rejected as Jain discloses a coupled cavity

(column 4 line 10). Claim 17 is rejected as above. Claims 18 and 19 are rejected as Jain

discloses electrodes coupled to the emitter, base and collector regions of the device

which again are fundamentally necessary. Claim 20 is rejected as above. Claim 21 is

rejected as Jain shows layered structure in figures 2 and 5 and a lateral cavity. Claim 22

is rejected as figure 3 shows a vertical cavity. Claim 24 is rejected as Jain teaches

GaAs based devices. Claims 26-36, 39-41, 43, 44, are rejected as above. Claims 37 and

38 are rejected as column 5 lines 26-30 disclose a matrix embodiment.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain in view of Yoshii '195.

Yoshii shows a similar heterojunction light emitting bipolar device and teaches in paragraph 0185 that various III-V materials are useful for emission at different wavelengths. For the same reasons it would have been obvious to have practiced III-V materials such as InP or GaN as laser materials in Jain.

Claims 42 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain in view of Chapple-Sokol '050 (CS).

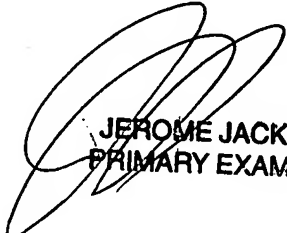
CS teaches a direct bandgap quantum dot light emitting device and suggests such material for the quantum well embodiments of Jain to take advantage of the dominant material aspects of silicon technology. See columns 1 and 2. Accordingly claims 42 and 45-47 are obvious variations of a Jain device practiced with silicon based quantum dot material from CS.

Yamanishi '535 and Ono '854 are relevant art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571 272 1730. The examiner can normally be reached on t-th 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571 272 1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JEROME JACKSON
PRIMARY EXAMINER